



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
1ST DISTRICT ENGINEERING OFFICE
OROQUIETA CITY, MISAMIS OCCIDENTAL

C.Y.2025 PROJECT
DETAILED ENGINEERING DESIGN PLAN FOR
**REPAIR/MAINTENANCE OF DAISUG REVETMENT 3, LOPEZ
JAENA, MISAMIS OCCIDENTAL**
LOPEZ JAENA, MISAMIS OCCIDENTAL
STATION LIMITS: STA. 0+463 TO STA. 0+489
NET LENGTH: 26.00 m

SUBMITTED:

GEORGIE L. REULAN
CHIEF, MAINTENANCE SECTION

DATE:

RECOMMENDED:

REY M. ROA
OIC-ASSISTANT DISTRICT ENGINEER

DATE:

APPROVED:

CHARITO B. MADULA
DISTRICT ENGINEER

DATE:

GS. GENERAL SPECIFICATION AND SUMMARY OF QUANTITIES

REPAIR/MAINTENANCE OF DAISUG REVEMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL

LOPEZ JAENA, MISAMIS OCCIDENTAL

INDEX OF DRAWING

DRAWING TITLE	SET NO.	SHEET NO.
TITLE SHEET		
GS. GENERAL SPECIFICATIONS & SUMMARY OF QUANTITIES:		
INDEX OF DRAWING	GS - 1	1
SUMMARY OF QUANTITIES	GS - 2	2
MINDANAO MAP, REGION X MAP & VICINITY MAP	GS - 3	3
SITE DEVELOPMENT PLAN	GS - 4	4
CLIMATE MAP, LIQUEFACTION MAP OF MISAMIS OCCIDENTAL	GS - 5	5
TSUNAMI MAP AND ACTIVE FAULT MAP	GS - 6	6
FLOOD AND LANDSLIDE HAZARD MAP	GS - 7	7
GEOMORPOLOGICAL MAP AND MINING TENEMENTS CONTROL MAP	GS - 8	8
GENERAL NOTES, SYMBOLS AND ABBREVIATIONS	GS - 9	9
TS. TYPICAL SECTIONS:		
DETAILS OF STEEL SHEET PILE & GENERAL NOTES	TS-1	10
TYPICAL DETAIL OF REVETMENT, SCHEDULE OF PROPOSED REVETMENT, DETAIL OF PILE CAP & PARAPET	TS-2	11
TYPICAL GABION BASKET DETAILS, TYPICAL DETAIL OF REVETMENT & STANDARD TIE WIRE DETAIL	TS-3	12
TYPICAL DETAIL OF RCPC TYPICAL DETAIL OF STAIRS	TS-4	13
GENERAL ELEVATION OF FLOOD CONTROL BEAM DETAIL	TS-5	14
REINFORCED CONCRETE & PIPE CULVERT DETAIL	TS-6	15
RCPC CROSS-SECTION DETAILS, TYPICAL DETAIL OF STONE MASONRY/RETAINING WALL, SCHEDULE OF RETAINING WALL & SCHEDULE OF CROSS DRAINAGE-REINFORCED CONCRETE PIPE CULVERT	TS-7	16
PP. PLAN & PROFILE:		
PLAN AND PROFILE	PP-1	17
CS. CROSS-SECTIONS		
3 CROSS-SECTION, STA. 0+463 TO STA. 0+489	CS-1	18
SG. STANDARDS & GENERAL DRAWINGS		
DPWH PROJECT BILLBOARD & COA PROJECT BILLBOARD	SG-1	19
MISAMIS OCCIDENTAL DISPOSAL MAP	SG-2	20
MATERIALS MAP	SG-3	21

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 8 1ST DISTRICT ENGINEERING OFFICE CROQUISITA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION:	SHEET CONTENTS	DRAFTED:	REVIEWED:	SUBMITTED:	RECOMMENDED:	APPROVED:	SET NO.	SHEET NO.
	REPAIR/MAINTENANCE OF SANSO RIVER REVETMENT & LOPEZ JANA, MISAMIS OCCIDENTAL	INDEX OF DRAWING	KARL ANDRÉS L. BERNARDO	MARK ANTHONY C. BELENO	GEORGIE L. RUELAN	REY M. ROA	CHARITO B. MADULA	GS-1	1
	LOPEZ JANA, MISAMIS OCCIDENTAL		MOHAMMAD T. MANSABAN					1	21

SUMMARY OF QUANTITIES					
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	QUANTITY	REMARKS
			AS TO PLAN	AS TO POW	
PART A	PROVISION OF FIELD OFFICE FOR THE ENGINEER (Rental Basis)				
A.1.1(8)	PROVISION OF FIELD OFFICE FOR THE ENGINEER (Rental Basis)	Month	5.00	5.00	
PART B	OTHER GENERAL REQUIREMENTS	-	-	-	
B.5	PROJECT BILLBOARD / SIGNBOARD	Each	2.00	2.00	
B.7(1)	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	Month	5.00	5.00	
B.9	MOBILIZATION/DEMOBILIZATION	Lump Sum	1.00	1.00	
PART C	EARTHWORKS	-	-	-	
101(6)	REMOVAL OF STRUCTURES AND OBSTRUCTION (Concrete)	Cu.M.	78.20	78.20	
104(5)	BOULDER FILL	Cu.M	216.55	216.55	
PART G	DRAINAGE AND SLOPE PROTECTION STRUCTURES				
508(1)	HAND-LAID ROCK EMBANKMENT	Cu.M	217.34	217.34	
PART J	FLOOD CONTROL AND DRAINAGE	-	-	-	
1700(1)	CLEARING AND GRUBBING	Sq.M.	472.63	472.63	
1702(1)a	STRUCTURE EXCAVATION (Common Soil)	Cu.M	13.82	13.82	
1710(2)a	GROUTED RIPRAP (Class A)	Cu.M	28.60	28.60	
1712(1)	BED COURSE GRANULAR MATERIAL	Cu.M in-place	6.52	6.52	
1712(2)	CONCRETE (Slope Protection)	Cu.M in-place	75.18	75.18	
1713	RUBBLE CONCRETE	cu. m.	26.67	26.67	
1717(5)a2	FURNISHED AND DRIVEN OF STEEL SHEET PILE (U-type, Grade 50)	Meter	639.00	639.00	

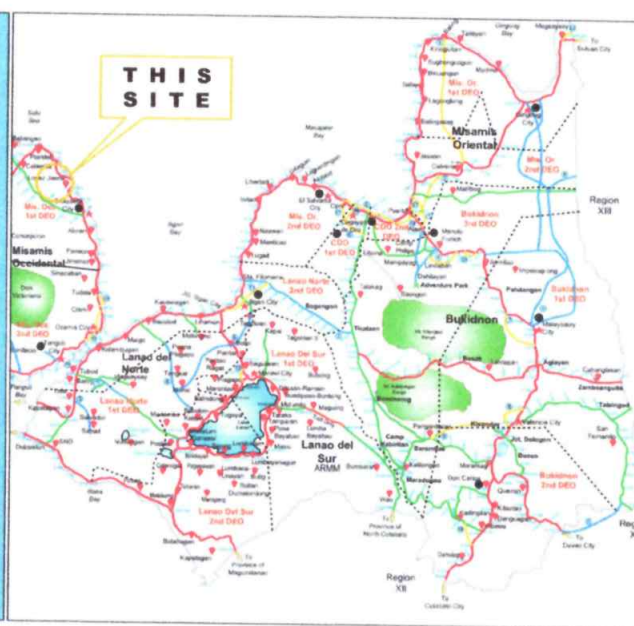
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 3 1ST DISTRICT ENGINEERING OFFICE CROOKEDTA CITY, NEGROS OCCIDENTAL	PROJECT NAME AND LOCATION	SHEET CONTENTS	DRAFTER KARL ANTHONY C. BELANO PREPARED BY MOHAMMAD ALI M. BARAN	REVIEWED  MARK ANTHONY C. BELANO ENGINEER	SUBMITTED  GEORGE L. RUELAN CHIEF MAINTENANCE SECTION	RECEIVED  REY M. ROA DISTRICT ENGINEER	APPROVED  CHARITO B. MADULA DISTRICT ENGINEER	TEXT NO. 05-2 2	SHEET NO. 2 21
	REPAIR/MAINTENANCE OF SAKUBO RIVER REVEGETATION 3, LOPEZ JAENA, NEGROS OCCIDENTAL LOPEZ JAENA, NEGROS OCCIDENTAL	SUMMARY OF QUANTITIES							



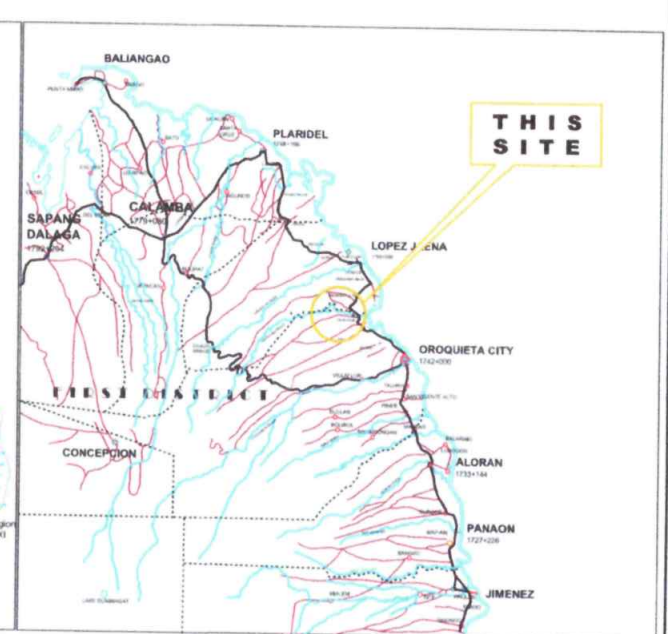
LOPEZ JAENA, MISAMIS OCCIDENTAL



MINDANAO MAP
NOT TO SCALE



REGION X MAP
NOT TO SCALE



VICINITY MAP
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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE 8
1ST DISTRICT ENGINEERING OFFICE
OROQUIETA CITY, MISAMIS OCCIDENTAL

PROJECT NAME AND LOCATION

REPAIR/MAINTENANCE OF DABUGO RIVER DIVERTMENT 3, LOPEZ JAENA,
MISAMIS OCCIDENTAL
LOPEZ JAENA, MISAMIS OCCIDENTAL

SHEET CONTENTS

MINDANAO MAP
REGION X MAP
VICINITY MAP

DRAFTED

KARL ANTHONY S. ESTRADA

PREPARED

MOHAMMAD S. ALI

REVIEWED

MARK ANTHONY S. BELENO

CHECKED

DATE

REMARKS

GEORGE L. RUELAN

CHIEF, MAINTENANCE SECTION

DATE

RECOMMENDED

JOSE M. ROA

1ST DISTRICT ENGINEER

DATE

APPROVED

CHARITO B. MADULA

DIRECTOR

DATE

SHEET NO.

GS-3

3

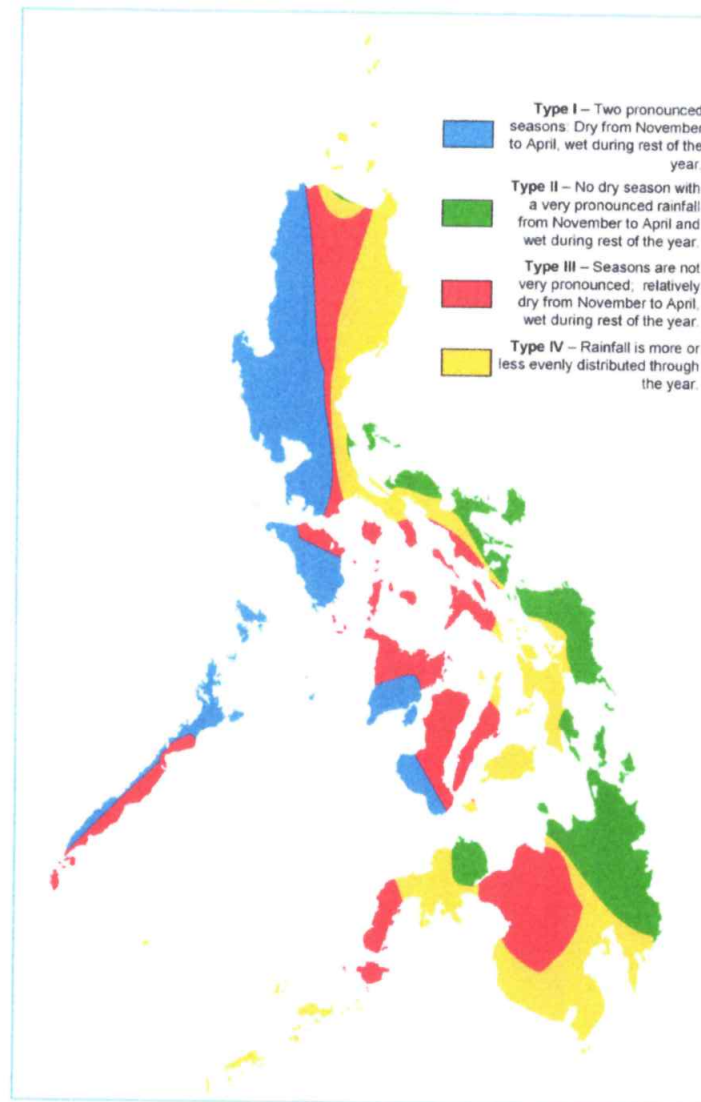
21



SITE DEVELOPMENT PLAN

NOT TO SCALE

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 8 1ST DISTRICT ENGINEERING OFFICE ORIGUITA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION REPAIR/MAINTENANCE OF DAIKIG RIVER REVEMENT S. LOPEZ JAENA, MISAMIS OCCIDENTAL LOPEZ JAENA, MISAMIS OCCIDENTAL	SHEET CONTENTS SITE DEVELOPMENT PLAN	DRAWN BY KARL ANTHONY C. ESTRADA PROJECT ENGINEER MOHAMMED H. HAKIM	REVIEWED BY MARK ANTHONY C. BELENO ENGINEER	SUBMITTED BY GEORGIE L. RUELAN CIVIL ENGINEER	RECOMMENDED BY WY M. ROA DISTRICT ENGINEER	APPROVED BY CHARITO B. MADULA DISTRICT ENGINEER	SET NO. GS-4 4 9 SHEET NO. 4 21
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CLIMATE MAP
NOT TO SCALE

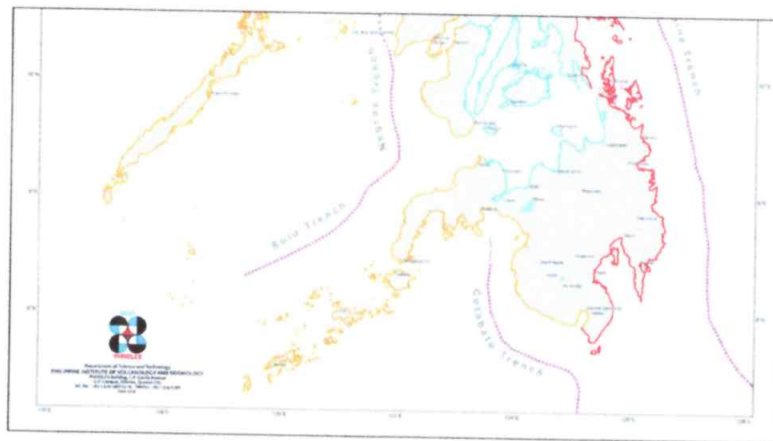


LIQUEFACTION MAP OF MISAMIS OCCIDENTAL
NOT TO SCALE

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 8 1ST DISTRICT ENGINEERING OFFICE OPORQUETA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION REPAIR/MAINTENANCE OF BANGAY RIVER DIVERTMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL	SHEET CONTENTS CLIMATE MAP LIQUEFACTION MAP OF MISAMIS OCCIDENTAL	DESIGNED BY KARL ANTHONY A. ESTRADA PREPARED BY MARK ANTHONY C. BELENO MOHAMMED A. MARIAN	REVIEWED BY GEORGE L. RUELAN CHIEF MAINTENANCE SECTION	RECOMMENDED BY REY M. ROA DISTRICT ENGINEER	APPROVED BY CHARITO B. MADULA DISTRICT ENGINEER	SHEET NO. 5 SHEET NO. 21
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LEGEND:

	Prone to trench-related local and distant tsunami
	Prone to trench-related local tsunami
	Prone to offshore fault and submarine landslide related to tsunami
Earthquake Sources	
	Solid line - Trace certain;
	Dashed line - trace is approximate;
	Transform Fault
	Lakes and Reservoir
	Capital City/Municipality



TSUNAMI MAP
NOT TO SCALE

LEGEND:

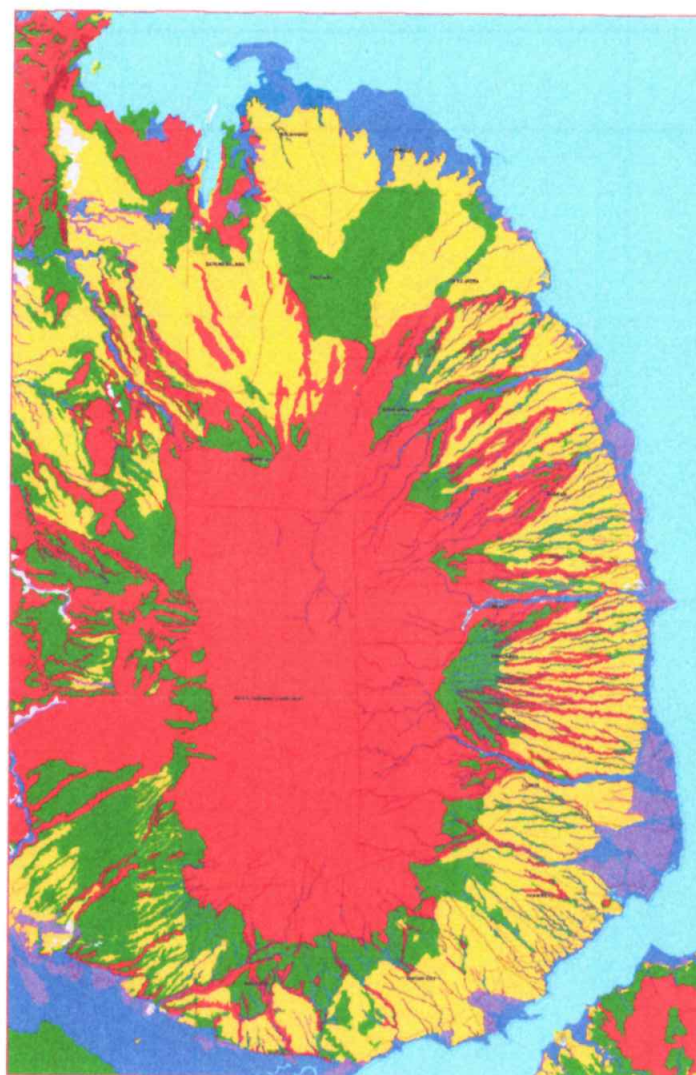
Active Faults	
	Solid line - Trace certain;
	Dashed line - trace is approximate;
	Dotted line - approximate offshore projection
Potential Active Faults	
	Solid line - Trace certain;
	Dashed line - trace is approximate;
Volcano	
	Active Volcano

SEISMIC HAZARD ASSESSMENT	
Prone to trench-related local and distant tsunami	Prone to trench-related local tsunami
Prone to offshore fault and submarine landslide related to tsunami	Prone to offshore fault and submarine landslide related to tsunami
Prone to trench-related local tsunami	Prone to trench-related local tsunami
Prone to offshore fault and submarine landslide related to tsunami	Prone to offshore fault and submarine landslide related to tsunami
Prone to trench-related local tsunami	Prone to trench-related local tsunami
Prone to offshore fault and submarine landslide related to tsunami	Prone to offshore fault and submarine landslide related to tsunami
Prone to trench-related local tsunami	Prone to trench-related local tsunami
Prone to offshore fault and submarine landslide related to tsunami	Prone to offshore fault and submarine landslide related to tsunami
Prone to trench-related local tsunami	Prone to trench-related local tsunami
Prone to offshore fault and submarine landslide related to tsunami	Prone to offshore fault and submarine landslide related to tsunami



ACTIVE FAULT MAP
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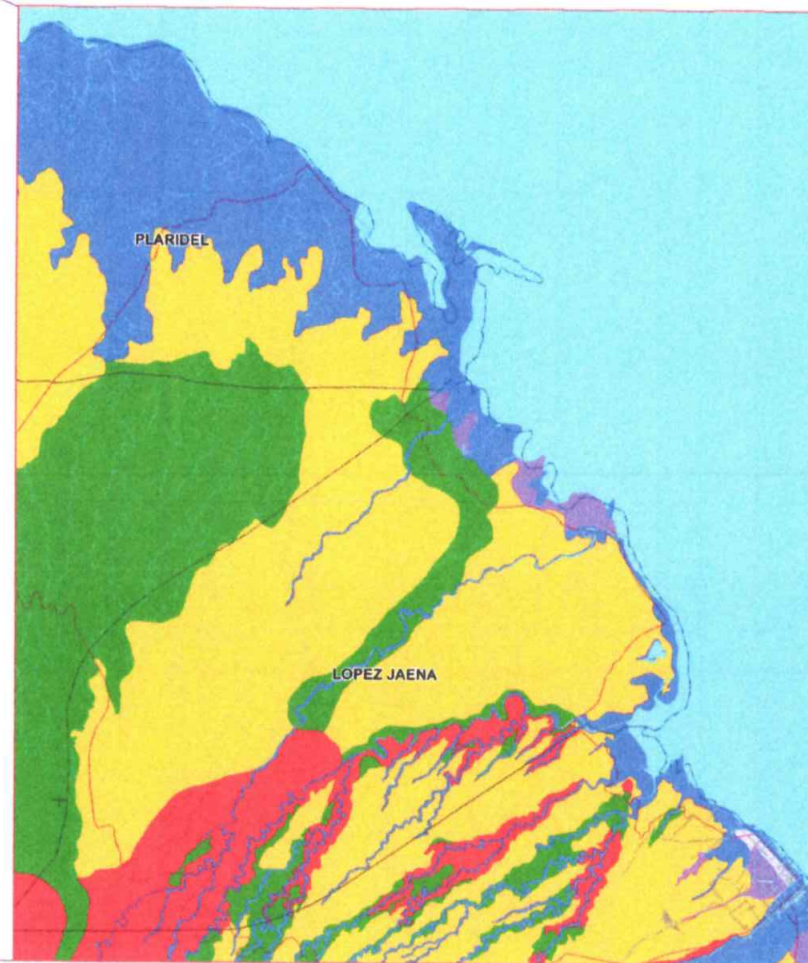
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 1 1ST DISTRICT ENGINEERING OFFICE OROQUIETA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION	SHEET CONTENTS	DESIGNED BY	REVIEWED BY	SUBMITTED BY	RECOMMENDED BY	APPROVED BY	SHEET NO.	SHEET NO.
	REPAIR/MAINTENANCE OF DABU RIVER NEARBY S. & OROQUIETA, MISAMIS OCCIDENTAL	TSUNAMI MAP- ACTIVE FAULT MAP	KARL ANTONIO C. ESTRADA	MARK ANTHONY C. BELENO	GEORGE L. RUELAN	JOY M. ROA	CHARITO B. MADULA	63	21



HAZARD MAP

LEGEND:

				
HIGH SUSCEPTIBILITY TO LANDSLIDE	MODERATE SUSCEPTIBILITY TO LANDSLIDE	LOW SUSCEPTIBILITY TO LANDSLIDE	HIGH SUSCEPTIBILITY TO FLOODING	LOW TO MODERATE SUSCEPTIBILITY TO FLOODING



LOPEZ JAENA, MISAMIS OCCIDENTAL

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 8 1ST DISTRICT ENGINEERING OFFICE CROQUIS TA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION	SHEET CONTENTS	DESIGNED BY	REVIEWED BY	SUBMITTED BY	RECOMMENDED BY	APPROVED BY	SHEET NO.	SHEET NO.
	REPAIR/MAINTENANCE OF DABUG RIVER DEVELOPMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL	FLOOD AND LANDSLIDE HAZARD MAP	KARL ANTHONY C. BELANO	MARK ANTHONY C. BELANO	GEORGE L. RUELAN	REY M. ROA	CHARITO B. MADULA	7	21
	LOPEZ JAENA, MISAMIS OCCIDENTAL		MONTECALVO, MISAMIS OCCIDENTAL	DATE	DATE	DATE	DATE		

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Republic of the Philippines
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
MINES AND GEOSCIENCES BUREAU
REGION NO. X

DENR-10 Compound, Puntod, Cagayan de Oro City
Telefax Nos. (088)856-2110 856-1331 Email: region10@mgb.gov.ph

MINING TENEMENTS CONTROL MAP
as of FEBRUARY 2022

0 10 20 40 60
Kilometers

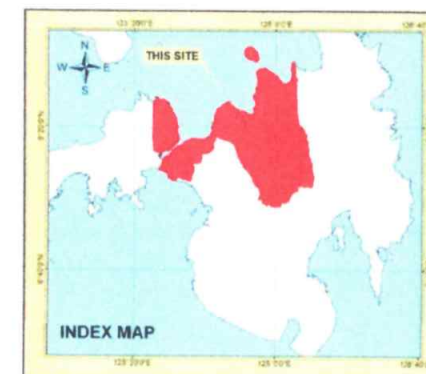
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LEGEND

	Provincial Boundary		Municipal Boundary		Sea/Water
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NO.	TENEMENT #	HOLDER	PROVINCE	AREA	COMMODITY
66	EXPA-000113-X	DIEGO C. TY FORMERLY JUAN CARILLO	MISAMIS OCCIDENTAL	1620.00	MANGANESE OR

MISAMIS OCCIDENTAL
Misamis Occidental



 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 4 1ST DISTRICT ENGINEERING OFFICE CAGUIGUA CITY, MISAMI OCCIDENTAL	PROJECT NAME AND LOCATION	SHEET COMMENTS	DRAWN BY	REVISED	SUBMITTED	RECOMMENDED	APPROVED	SET NO.	SHEET NO.
	REPAIR/MAINTENANCE OF DABAGS RIVER RETENTION 1, LOPEZ JAENA, MISAMI OCCIDENTAL LOPEZ JAENA, MISAMI OCCIDENTAL	GEODATOPOLYGRAPHIC MAP MARIANO TENEMENTS CONTROL MAP	KARL ANTHONY C. BELENO PREPARED BY MOHAMMAD M. ALIBARAH	KARL ANTHONY C. BELENO ENGINEER 2 DATE:	GEORGE L. RUELAN CHIEF MAINTENANCE SECTION DATE:	REY M. ROA 1ST DISTRICT ENGINEER DATE:	CHARITO B. MADULA DISTRICT ENGINEER DATE:	OS-4 8 19	8 21

GENERAL NOTES

(ROADS, DRAINAGE AND STRUCTURES)

1.0 SPECIFICATIONS

1.1 ALL WORKS SHALL COMPLY WITH THE DPWH STANDARD SPECIFICATIONS VOLUME II, HIGHWAYS, BRIDGES AND AIRPORTS 2013, SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS PERTAINING TO THIS PROJECT.

2.0 DIMENSIONS

- 2.1 DISTANCES BETWEEN HORIZONTAL CONTROL POINTS INCLUDING REFERENCE POINTS ARE MEASURED AND EXPRESSED IN METERS.
2.2 UNLESS OTHERWISE SPECIFIED, DIMENSION OF PIPES, BOX CULVERTS, BRIDGES AND OTHER STRUCTURES ARE MEASURED AND EXPRESSED IN MILLIMETERS.
2.3 ALL OTHER DIMENSIONS ARE EXPRESSED IN METERS.

3.0 STATIONING

- 3.1 THE ROAD STATIONINGS AND ELEMENTS OF HORIZONTAL AND VERTICAL CURVES SHOWN ON THE PLAN AND PROFILE SHEETS ARE RECKONED FROM THE ROADWAY CENTERLINE.
3.2 STATIONINGS OF THE BRIDGES, RPCP AND OTHER STRUCTURES ARE RECKONED FROM THE STATIONING OF THE ROADWAY CENTERLINE SHOWN ON THE PLAN.

4.0 HORIZONTAL CONTROL

- 4.1 PRIMARY HORIZONTAL CONTROL POINTS WERE ESTABLISHED THROUGH GLOBAL POSITIONING SYSTEM (GPS) OBSERVATION USING THE NAMRIA CONTROL POINT. GPS STATIONS WERE ESTABLISHED ALONG THE PROJECT.
4.2 BASIC TRAVERSE WAS ESTABLISHED USING A PRECISE DISTANCE MEASURING DEVICE, AND A T2 THEODOLITE FOR ANGULAR MEASUREMENTS.
4.3 AZIMUTH AND DISTANCES BETWEEN CONTROL POINTS WERE MEASURED WITH THE USE OF AN ELECTRONIC MEASURING DEVICE (EDC) AND THEODOLITE OR TOTAL STATION.
4.4 INDICATED AZIMUTH OF LINES ARE GRID AZIMUTH BASED FROM GPS STATIONS, ESTABLISHED ALONG THE ROAD.
4.5 THE GRID COORDINATES WERE ESTABLISHED BASED ON GRID COORDINATES OF NAMRIA CONTROL STATION.

5.0 VERTICAL CONTROL

- 5.1 VERTICAL DATUM WERE RECKONED FROM TIDAL OBSERVATION IN VIEW OF THE ABSENCE OF AN ESTABLISHED VERTICAL CONTROL IN THE PROJECT AREA.
5.2 BASIC TRAVERSE STATIONS AND GPS STATIONS ON CONCRETE MONUMENTS WERE ESTABLISHED AS BENCH MARKS.
5.3 ALL ESTABLISHED BENCH MARKS ARE OF THE PRIMARY ORDER OF ACCURACY.

6.0 ELEVATIONS AND GRADES

- 6.1 FINISHED GRADE ELEVATIONS INDICATED ON THE PLAN AND PROFILE SHEETS REFER TO THE FINISHED ROAD ELEVATION (TOP OF FINISHED PAVEMENT) AS SHOWN ON THE TYPICAL ROADWAY SECTIONS.
6.2 ORIGINAL GROUND ELEVATIONS SHOWN ON THE PLAN AND PROFILE SHEETS REFER TO THE ELEVATIONS OF THE EXISTING GROUND OR GRADE ALONG THE BASELINE OF THE SPECIFIED ROADWAY.

7.0 ROAD CONNECTIONS

- 7.1 APPROACHES AND CONNECTIONS SHALL BE CONSTRUCTED BY THE CONTRACTOR AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER IN SUCH MANNER AS TO ENSURE SMOOTH CONNECTION AND GOOD RIDING QUALITY.
7.2 EXACT LOCATIONS OF INTERSECTING ROADS WHERE ITEM 7.1 ABOVE APPLIES, SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
7.3 PROVIDE TAPER LENGTH OF 15m ALONG PCP AND ACP CONNECTIONS.

8.0 DRAINAGE STRUCTURE

- 8.1 EXACT LOCATIONS, SLOPES, OUTFALLS, AND INVERT ELEVATIONS OF DRAINAGE STRUCTURES SHALL BE CHECKED IN THE FIELD. ADJUSTMENT MAYBE MADE TO SUIT ACTUAL FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
8.2 EXISTING DRAINAGE STRUCTURES OR PARTS THEREOF REMOVED BY THE CONTRACTOR WHICH ARE STILL SERVICEABLE SHALL BE DEPOSITED AT A PLACE DESIGNATED BY THE ENGINEER WITHIN THE PROJECT SITE WITHOUT ANY COMPENSATION. EXTREME PRECAUTIONS SHALL BE EXERCISED BY THE CONTRACTOR SO AS NOT TO DAMAGE THESE MATERIALS DURING THE REMOVAL AND HANDLING.

9.0 ROAD SIGNS AND PAVEMENT MARKINGS

- 9.1 ROAD SIGNS SHALL CONFORM WITH THE PHILIPPINE ROAD SIGNS AND PAVEMENT MARKINGS MANUAL (REVISED EDITION) OF THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, FEBRUARY 2004.

10.0 MISCELLANEOUS STRUCTURES

- 10.1 LOCATION AND LENGTH OF SLOPE PROTECTIONS, GUARDRAILS, STONE MASONRY, RETAINING WALLS AND OTHER STRUCTURES MAY BE ADJUSTED BY THE CONTRACTOR TO SUIT ACTUAL FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.

11.0 REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTION

- 11.1 ALL WORKS SHALL COMPLY WITH THE ITEM 101 OF DPWH STANDARD SPECIFICATIONS VOLUME II, HIGHWAYS, BRIDGES AND AIRPORTS, 2004.
11.2 PORTION OF ANY UTILITIES SUCH AS WATER WALLS, IRRIGATION CHANNEL, TELEPHONE POSTS AND TRUNK LINES ETC. THAT MAY CAUSE OBSTRUCTION TO CONSTRUCTIONS SHALL BE RELOCATED BY THE ENTITLED OWNER CONCERNED. EXTREME PRECAUTION SHALL BE TAKEN BY THE CONTRACTOR NOT TO DAMAGE ANY SECTION OF THE EXISTING PUBLIC UTILITIES DURING CONSTRUCTION. ANY DAMAGE THEREOF SHALL BE ON THE ACCOUNT OF THE CONTRACTOR.

12.0 BATAS PAMBANSA B.L.G. 244 (ACCESSIBILITY LAW)

- 12.1 IN ACCORDANCE TO BATAS PAMBANSA B.L.G. 244, ACCESS FOR THE DISABLED PERSONS SHALL BE PROVIDED AT THE DESIGNATED PLACE IN BUILT-UP AREAS ALONG THE PROJECT ROAD APPROVED BY THE ENGINEER. THE COST THEREOF SHALL BE CHARGED AGAINST THE DAYWORKS SCHEDULE INCLUDED IN THIS CONTRACT.

13.0 RIGHT-OF-WAY

- 13.1 ROAD CLASSIFICATION DICTATES THE RIGHT-OF-WAY LIMITS.

14.0 CONCRETE

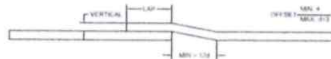
14.1 CONCRETE STRENGTH BY CLASS.

CLASS	28 DAYS CYLINDER STRENGTH (MPa)	MAX. SIFT OF COARSE AGGREGATE (mm)
A	20.7	25
B	16.7	25
C	12.7	25
D	8.0	25

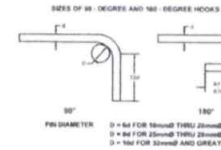
- 14.2 THE CONTRACTOR SHALL SUBMIT A SUPERSTRUCTURE PLACING SEQUENCE FOR THE ENGINEER'S APPROVAL.
14.3 ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED OR AS DIRECTED BY THE ENGINEER.

15.0 REINFORCING STEEL

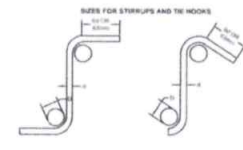
- 15.1 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION. SHOP DRAWINGS SHOULD SHOW DETAILS FOR FABRICATIONS AND FOR PLACING REINFORCING STEEL. ONLY THOSE NECESSARY FOR THE PROPER LOCATION OF THE STEEL ARE REQUIRED ON THE DRAWINGS, BENDING DETAILS MAY BE SHOWN ON A SEPARATE SHEET.
15.2 NO MORE THAN ONE BAR IN THREE SHALL BE SPICED AT THE SAME SECTION UNLESS OTHERWISE SHOWN. SPICING SHALL BE KEPT TO A MINIMUM AND SHOULD BE STAGGERED AND LAPPED NOT LESS THAN 40 BAR DIAMETER UNLESS OTHERWISE SHOWN ON DRAWING. WHERE THE CLEAR DISTANCE BETWEEN LAPPED BARS DO NOT MEET THE REQUIREMENTS IN ITEM 12.4, THE CONTRACTOR SHALL USED CRANKED SPLICES AS DETAILED BELOW.



- 15.3 BAR SHALL BE BENT COLD, NO BAR PARTIALLY EMBEDDED IN CONCRETE SHALL BE FIELD BENT, UNLESS SHOWN ON THE DRAWING OR SPECIALLY PERMITTED BY THE ENGINEER. HOOKS SHALL BE FABRICATED AS SHOWN BELOW UNLESS OTHERWISE INDICATED ON THE DRAWING. BAR SHALL BE BENT AROUND A PIN WITH A MINIMUM DIAMETER D.



NOTES: BENDS AND HOOKS IN STIRRUPS OR TIES MAY BE BENT TO THE DIAMETER OF THE REINFORCING BAR ENCLOSED THEREIN.



PIN DIAMETER: D = 40 FOR 10mm AND SMALLER
D = 50 FOR 20mm AND 25mm

- 15.4 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE CLEAR DISTANCE BETWEEN PARALLEL BAR SHALL NOT BE LESS THAN THE NOMINAL DIAMETER OF THE BARS NOR 1-10 TIMES THE MAXIMUM SIZE OF THE COARSE AGGREGATE WHEN REINFORCEMENT IN THE BEAMS OR GIRDERS IS PLACED IN TWO OR MORE LAYERS. THE CLEAR DISTANCE BETWEEN LAYERS SHALL NOT BE LESS THAN 25mm NOR ONE BAR DIAMETER AND THE BARS IN THE UPPER LAYER SHALL BE PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.
15.5 EXCEPT OTHERWISE SHOWN ON THE DRAWINGS, MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT AS FOLLOWS.

	MINIMUM CLEAR COVER (mm)
CONCRETE IN A MARINE ENVIRONMENT OR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO CLIMATE	75 (3)
CONCRETE EXPOSED TO WEATHER OR WEATHER OR PRIMARY REINFORCEMENT	50 (2)
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	40 (1.5)
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	25 (1)
CONCRETE IN CONTACT WITH GROUND	75 (3)
CONCRETE IN CONTACT WITH GROUND	25 (1)

16.0 EMBANKMENT

- 16.1 COMMON MATERIAL OR ROCK, SELECTED BORROW FOR TOPPING SOIL OF SUCH GRADATION THAT ALL PARTICLES WILL PASS A SIEVE WITH 75mm (3/4 INCHES) SQUARE OPENINGS AND THE MASS PERCENT WILL PASS THE 6.75mm (NO. 200) SIEVE, PL ≤ 30.

17.0 HYDRAULIC DESIGN DATA

- 17.1 VALUES ARE BASED ON A 50yr RETURN PERIOD BASED ON DGCS 2016 VOLUME 3.

18.0 CHANNEL DREDGING WORKS

- 18.1 THE CHANNEL DREDGING WORKS SHALL COMPLY WITH THE PROVISIONS OF DEPT. ORDER NO. 139, SERIES OF 2014, "GUIDELINES ON RIVER DREDGING OPERATIONS FOR FLOOD CONTROL."

19.0 EXCAVATED SPOIL SITE

- 19.1 UNSUITABLE MATERIAL REMOVED (EXCAVATED SPOIL) SHALL BE DISPOSED OFF IN DESIGNATED AREAS SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE DEEMED TO HAVE INCLUDED IN THE CONTRACT UNIT PRICES ALL COST OF OBTAINING LAND FOR THE DISPOSAL OF EXCAVATED SOIL.

20.0 PROJECT BILLBOARD

- 20.1 THE PREPARATION AND INSTALLATION OF PROJECT BILLBOARDS SHALL COMPLY WITH THE PROVISIONS OF DEPARTMENT ORDER NO. 072, SERIES OF 2015, "REVISED GUIDELINES ON THE INSTALLATION OF PROJECT BILLBOARDS."

21.0 OTHERS

- 21.1 DESIGN OF THE PROJECT WAS BASED ON THE SURVEY AND GEOTECHNICAL INVESTIGATION CONDUCTED BY THE CONSULTANT.
21.2 THE FLOOD RETURN PERIOD USE FOR THE DESIGN IS 50 YEARS WITH 1.0m FREEBOARD AS PER DPWH DESIGN GUIDELINES AND CRITERIA AND STANDARDS, 2015 EDITION.

LEGEND/SYMBOLS

PLAN VIEW AND ELEVATION OF CUT & FILL SLOPES	ROAD CENTERLINE	RESIDENTIAL BUILDING
NORTH ARROW	BRIDGE	DIRECTIONAL ARROW
BM BENCH MARK	GROUTED REPAIR	TREES/WILD GRASS
CONTOUR	WATER LEVEL	BH BORE HOLE
		RPCP

ABBREVIATIONS

ACUT = AREA CUT	E = EASTING	Min. = MINIMUM
AREA = AREA FILL	ELEV. = ELEVATION	mm = MILLIMETER
AASHTO = AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS	ENGR. = ENGINEER	N = NORTHING
APPROX. = APPROXIMATE	F.G. = FINISH GRADE ELEVATION	NO. = NUMBER
ASTM = AMERICAN SOCIETY FOR TESTING MATERIALS	GPS = GLOBAL POSITIONING SYSTEM	ON CENTER
APCCP = AREA OF PORTLAND CEMENT CONCRETE PAVEMENT	S = SLOPE	O.G. = ORIGINAL GROUND TOP OF EXISTING PAVEMENT
BR = BRIDGE	H = HEIGHT	CWL = URBAN WATER LEVEL
BARCAY = BARANGAY	HRSL = HORIZONTAL	RCPC = REINFORCED CONCRETE BOX CULVERT
BEG. = BEGINNING	kgm = KILOGRAM	RSB = REINFORCED STEEL BAR
BH = BORE HOLE	K = KILOMETER	STA. = STATION
CM = CENTIMETER	L = LENGTH	THK. = THICK
CU.M. = CUBIC METER	LAT. = LATITUDE	TEMP. = TEMPERATURE
DET. = DETAIL	LONG. = LONGITUDE	VAR. = VARIABLE
CONC. = CONCRETE	M. = METER	VERT. = VERTICAL
DA. M. = DIAMETER	N. = NORTH	Ø = DIA.
DIST. = DISTANCE	MAX. = MAXIMUM	Q. = QTY.
DPWH = DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	MIN. = MINIMUM	
DWG. = DRAWING		



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE 8
1ST DISTRICT ENGINEERING OFFICE
CAGAYAN CITY, MISAMIS OCCIDENTAL

PROJECT NAME AND LOCATION:

REPAIR/MAINTENANCE OF DABAO RIVER REINFORCEMENT 1, LOPEZ JAENA, MISAMIS OCCIDENTAL
LOPEZ JAENA, MISAMIS OCCIDENTAL

SHEET CONTENTS:

GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

DESIGNED BY:

KARL ANTHONY C. ESTRADA
ENGINEER

CHECKED BY:

MARK ANTHONY C. ELENO
ENGINEER

REVIEWED BY:

GEORGE L. RUELAN
ENGINEER

RECOMMENDED BY:

RAY M. ROA
DISTRICT ENGINEER

APPROVED BY:

CHARITO B. MADULA
DISTRICT ENGINEER

SHEET NO.

99

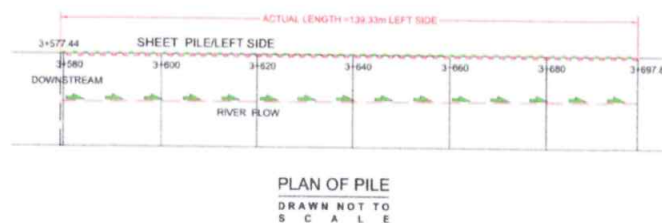
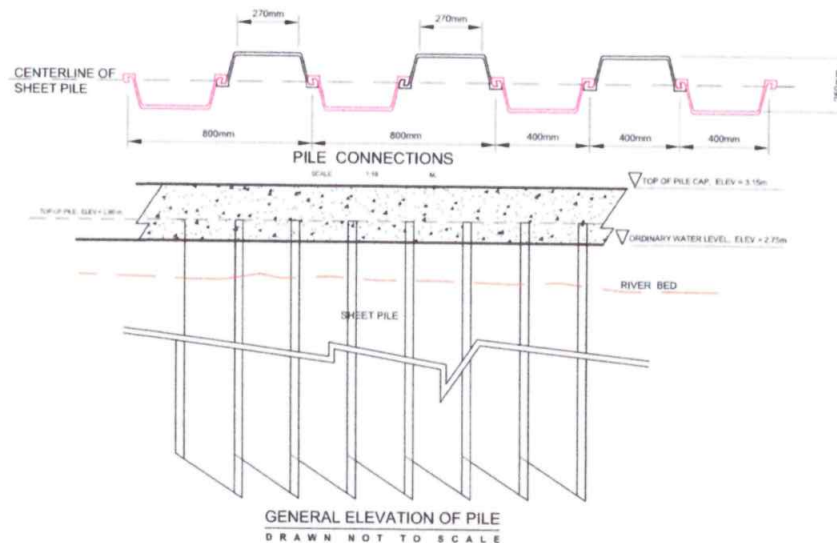
SHEET NO.

21

TS. TYPICAL SECTIONS

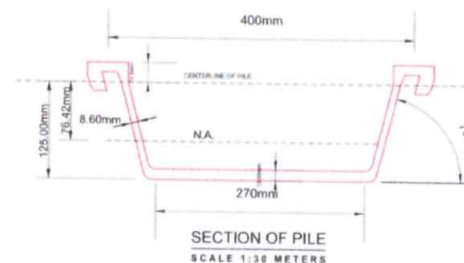
REPAIR/MAINTENANCE OF DAISUG REVETMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL

LOPEZ JAENA, MISAMIS OCCIDENTAL



GENERAL NOTES :

1. DOWN STANDARD SPECIFICATIONS FOR HIGHWAYS AND ROADS REVISION 2008 HAVE BEEN ADOPTED.
2. ALL ELEVATIONS, DIMENSIONS AND DISTANCES WERE IN METERS UNLESS OTHERWISE SPECIFIED.
3. REFERENCE DATUM PLANE = MEAN SEA LEVEL.
4. ALL CONCRETE MIXTURES SHALL BE CLASS "A" 28 MPa (408 PSI) FOR THE PILE CAP AND THE REINFORCED SECTION OF THE RETENTION EXCEPT FOR THE RUBBLE CONCRETE WHICH WERE CLASS "B" 17.25 MPa (2,500 PSI).
5. CONCRETE PROTECTION FOR REINFORCING STEEL BARS WERE AT LEAST 75mm.
6. SHEET PILES WERE DRIVEN TO ELEVATION SHOWN ON THE PLAN OR AS ORDERED BY THE ENGINEER. WHERE IMPRACTICAL TO DRIVE TO PLAN ELEVATION DUE TO SUBSUNDRANCE CONDITIONS, THE DRIVING OF PILES MAY BE STOPPED AT A HIGHER ELEVATION WITH THE WRITTEN PERMISSION OF THE ENGINEER. HOWEVER, BEFORE GRANTING SUCH PERMISSION, THE ENGINEER MUST BE ASSURED THAT THE CONTRACTOR HAS ADEQUATE EQUIPMENT FOR THE REQUIRED DRIVING AND THAT THE PILES WERE DRIVEN TO THE PLAN ELEVATION WITH THE PROPER USE OF THE EQUIPMENT. THE TOP OF THE PILING WERE DRIVEN OR CUT OFF TO A STRAIGHT LINE AT THE ELEVATION INDICATED ON THE PLAN.
7. SHEET PILING WAS MEASURED BY THE LINEAR METER OF SHEET PILING AS SHOWN ON THE PLAN OR AS ORDERED BY THE ENGINEER. COMPLETE IN PLACE AND ACCEPTED. THE QUANTITY TO BE PAID FOR WILL BE THE SUM OF THE LENGTHS IN METERS OF PILES DRIVEN IN THE COMPLETED WORKS MEASURED FROM THE PILE TOP ELEVATION TO THE CUT-OFF ELEVATIONS.
8. BOULDERS OF TWO HUNDRED FIFTY TO THREE HUNDRED MM (250-300MM) IN DIAMETER WERE USED FOR THE FILL BEHIND THE PILING WITH THE REGULAR SOIL NEAR THE TOP OF THE FILL. ALL VOIDS BETWEEN BOULDERS WERE FILLED WITH MIXED SAND & GRAVEL AND COMPACTION WAS DONE BY WATERING.
9. **PILE DRIVING**
ALL PILES SHALL BE DRIVEN AS SHOWN ON THE PLAN OR AS ORDERED BY WRITING BY THE ENGINEER. THEY SHALL BE DRIVEN WITHIN AN ALLOWED VARIATION OF 30MM PER METRE OF PILE LENGTH FROM THE VERTICAL, OR BETTER, AS SHOWN ON THE PLAN. THE MAXIMUM ALLOWABLE VARIATION AT THE BUTT END OF THE PILE SHALL BE 10MM IN ANY DIRECTION FROM THE LOCATION SHOWN ON THE PLAN OR AS ORDERED BY THE ENGINEER. EACH PILE SHALL, AFTER DRIVING, BE WITHIN 10MM FROM THE THEORETICAL LOCATION UNDERNEATH THE PILE CAP OR UNDERNEATH THE SUPERSTRUCTURE CAUSE OF PILE BENTH. ALL PILES PUNCHED UP BY THE DRIVING OF ADJACENT PILES OR ANY OTHER CAUSE SHALL BE REDRIVEN.
PILES SHALL BE USED ONLY IN PLACES WHERE THE MINIMUM PENETRATION OF 30 IN FIRM MATERIALS OR 50 IN SOFT MATERIALS CAN BE OBTAINED. WHEREAS SOFT UPPER STRATUM OVERLIES A HARD STRATUM, THE PILES SHALL PENETRATE THE HARD MATERIALS AT SUFFICIENT DEPTHS TO FIX THE ENDS SECURELY.



ITEM	Quantity	Unit	Remarks	Quantity	Unit	Remarks	Quantity	Unit	Remarks	Quantity	Unit	Remarks
PILE	100	m	100	m	100	m	100	m	100	m	100	m
PILE	100	m	100	m	100	m	100	m	100	m	100	m



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE 6
1ST DISTRICT ENGINEERING OFFICE
(CAGAYAN CITY, MISAMIS OCCIDENTAL)

PROJECT NAME AND LOCATION
REPAIR/MAINTENANCE OF DABLO RIVER RETENTION S. LOPEZ JENA, MISAMIS OCCIDENTAL
LOPEZ JENA, MISAMIS OCCIDENTAL

SHEET CONTENTS
DETAILS OF STEEL SHEET PILE & GENERAL NOTES

DRAWN BY
KARL ANTHONY RIVERA ESTRADA
CHECKED BY
MARK ANTHONY G. BELLENO
DATE

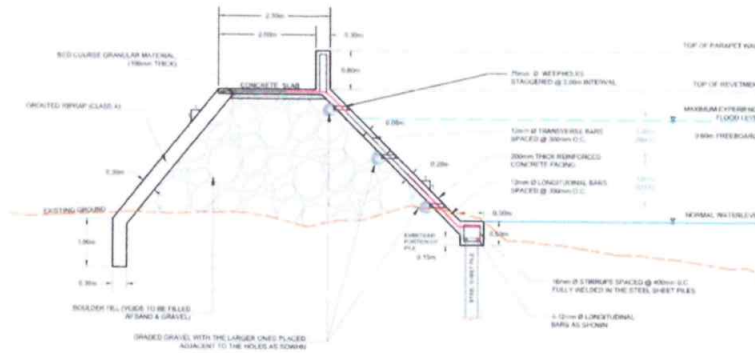
DESIGNED BY
GEORGE L. RUELAN
DATE

SUBMITTED BY
GEORGE L. RUELAN
DATE

REVIEWED BY
RAY M. ROA
DATE

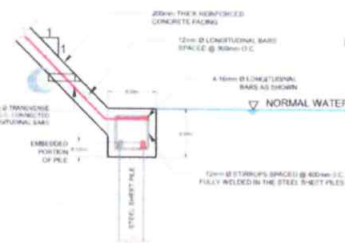
APPROVED BY
CHARITO B. MADULA
DATE

SHEET NO.
17
TOTAL SHEETS
21

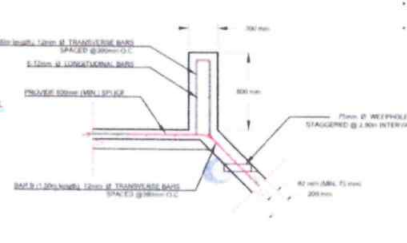


SCHEDULE OF REVETMENT			
FROM	TO	LENGTH	DESCRIPTION
STA. 0+463	STA. 0+480	17.00	RIGHT SIDE

TYPICAL DETAIL OF REVETMENT
SCALE 1:50 METERS



DETAIL OF PILE CAP
SCALE 1:25 METERS



DETAIL OF PARAPET
SCALE 1:25 METERS

DISCUSSION

- REPAIR AND ROUTED REPAIR - STONES FOR REPAIR SHALL CONSIST OF ROCK AS NEARLY AS RECTANGULAR IN SECTION AS IS PRACTICAL, EXCEPT THAT REPAIR OF CLAS A MAY CONSIST OF ROUND NATURAL STONES. THE STONES SHALL BE AS NEARLY AS ROUND AS PRACTICAL, RESISTANT TO THE ACTION OF AIR AND WATER, AND STABLE IN ALL RESPECTS FOR THE PURPOSE INTENDED.

CLASS A - STONES RANGING FROM A MINIMUM OF 100g TO A MAXIMUM OF 200g WITH AT LEAST 90 PERCENT OF THE STONES WEIGHING MORE THAN 200g.

- THE MINIMUM WHICH REQUIRED: THE REPAIR SHALL BE PLACED ON A FINE LAYER TO PREVENT FINE EMBANKMENT MATERIAL TO BE WASHED OUT THROUGH THE JOINTS OF THE FACE STONES. THE GRADING OF THE FINE MATERIAL SHALL BE AS SPECIFIED ON THE PLANS, OR IN THE SPECIFICATIONS. IF NOT SO SPECIFIED, IT SHALL BE REQUIRED THAT 50% OF THE FINE LAYER AT LEAST 4 TIMES THE SIZE FOR THE EMBANKMENT MATERIAL. PROPER DISPERSED AND 40 PERCENT RESISTANTLY PASSING BY STANDARD SAND SIEVE ANALYSIS. FINE AGGREGATE PASSING (GRADE) REQUIREMENTS FOR FINE AGGREGATE CONCRETE WILL LATER FOLLOWING REQUIREMENTS.

ROCKS AND STONES - UNLESS OTHER RULES ARE SHOWN ON THE PLANS, STONES HAVE A THICKNESS OF NOT LESS THAN 100 MM AND WIDTH OF NOT LESS THAN ONE AND ONE HALF TIMES THEIR RESPECTIVE THICKNESS, AND LENGTH OF NOT LESS THAN ONE AND ONE HALF TIMES THEIR RESPECTIVE WIDTH. EACH STONE SHALL BE OF GOOD SHAPE AND BE FREE OF DISPERSED AND PROJECTIONS THAT MIGHT WEAR OR PREVENT IT FROM BEING PROPERLY BEDDED.

DESIGNS - THE WORK SHALL BE DESIGNED TO REMOVE ANY FILL OR WEAK PORTIONS, FACE STONES SHALL BE DESIGNED TO PROVIDE BETTER JOINTS THAT TO NOT VARY MORE THAN 20 MM FROM THE BEARING AND TO ENSURE THE MEETING OF BET AND JOINT LINES WITHOUT THE ROUNDING OF CORNERS OF THE STONE. THE SURFACE OF AN AREA ROUNDED SURFACES OF THE FACE STONES SHALL BE APPROXIMATELY NORMAL TO THE FACE OF THE STONES FOR ABOUT 80 MM AND FROM THE POINT OF DEPART FROM A NORMAL PLANE NOT TO EXCEED 10 MM IN 100 MM.

FINISH FOR EXPOSED FACES - FACE STONES SHALL BE PLACED TO THE LINE ALONG THE BED AND JOINTS. THE MINIMUM PROJECTION OF ROCK FACES BEYOND THE FACE LINE SHALL NOT BE MORE THAN 10 MM.

- PREPARATION OF FOUNDATION BED - THE FOUNDATION SHALL BE ENCASED TO THE LINE AND GRADED AS SHOWN IN THE PLANS AS DIRECTED BY THE ENGINEER, AND SHALL BE THOROUGHLY COMPACTED IN ACCORDANCE WITH ITEM 81.

FOUNDATION AND FORMWORK CONSTRUCTION - FOUNDATION FORMWORK SHALL BE CONSTRUCTED SO AS TO WITHSTAND THE STRESSES TO APPLIED FORMWORK. USED SHALL BE CONSTRUCTED WITH SUFFICIENT STRENGTH, RIGIDITY & STIFFNESS TO CLAMP THE FORMS TO THE EMBANKMENT. SHOWN ON THE PLANS & WITH THE SURFACE FINISH SPECIFIED. THE INSIDE SURFACE OF THE FORMS SHALL BE CLEANED OF ALL DIRT, WATER AND FOREIGN MATERIALS. FORMS SHALL BE THOROUGHLY COATED WITH FORM OIL PRIOR TO USE. THE FORM OIL SHALL BE COMMERCIAL QUALITY FORM OIL OR OTHER APPROVED COATING WHICH WILL PERMIT THE READY RELEASE OF FORMS & WILL NOT DISCOLOR THE CONCRETE.

- PLACING - ONE LAYER OF CLASS "B" SHALL BE PLACED AT THE PREPARED BED PRIOR TO PLACING OF STONES. CLEARANCE BETWEEN STONES SHALL BE NOT BE LESS THAN 20 mm. THE MAXIMUM SIZE OF CONCRETE AGGREGATE FOR CLASS "B" CONCRETE SHALL BE PLACED AT THE END OF EACH LAYER OF STONE & SHALL BE THOROUGHLY CONSOLIDATED BY MEANS OF A VIBRATOR INSERTED IN EACH LAYER OF CONCRETE. IN NO CASE SHALL THE VIBRATOR BE OPERATED LONGER THAN TEN (10) SECONDS IN ANY LOCATION. UPON REMOVAL OF FORMS, ANY LARVES, HOLES & HONEYCOMB SPOTS SHALL BE FILLED UP WITH MORTAR CONSISTED OF ONE PART CEMENT & TWO PARTS SAND.

- WEEDPINS - IT SHALL CONFORM TO THE REQUIREMENTS OF ITEM 81. REPAIR & ROUTED REPAIR.
- STRUCTURAL CONCRETE - COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 30 MPa. AGGREGATE SIZE TO BE USED FOR CONCRETE SHALL BE 20mm MAXIMUM. FOR FOOTING & SLAB ON GRADE SHALL BE 30mm MAXIMUM.
- CEMENT - CEMENT USED IN THE WORK SHALL BE PORTLAND.
- WATER - WATER USED IN MIXING CONCRETE SHALL BE CLEANED & FREE FROM HARMFUL AMOUNTS OF OIL, ACID, ALKALI, SALT, FUEL, OIL, OR OTHER SUBSTANCES DETRIMENTAL TO CONCRETE OR STEEL.
- REINFORCING STEEL - REINFORCING STEEL SHALL BE 12mm OR 16mm DEFORMED BARS. ALL REINFORCING BARS SHALL BE SUPPORTED IN ACCORDANCE WITH THE MANUAL OF STANDARD PRACTICES FOR BRIDGES. DETAILING REINFORCED CONCRETE STRUCTURE LATEST EDITION. ALL BARS SHALL BE CLEANED AND MUST FREE FROM OIL, GREASE, RUST, OR OTHER SUBSTANCES DETRIMENTAL TO CONCRETE.

REINFORCING BARS CUTTING LIST FOR TRANSVERSE BARS		
BAR	LENGTH (meters)	PIECES
A	6.00	465
B	1.50	465
C	3.00	465



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGION OFFICE 8
1ST DISTRICT ENGINEERING OFFICE
CAGAYAN CITY, MISAMIS OCCIDENTAL

PROJECT NAME AND LOCATION

REPAIR/MAINTENANCE OF BAGO RIVER REVETMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL

SHEET CONTENTS

TYPICAL DETAIL OF REVETMENT
SCHEDULE OF PROPOSED REVETMENT
DETAIL OF PILE CAP
DETAIL OF PARAPET

DESIGNED BY

KARL ANTHONY C. ESTERONA

PREPARED BY

MOHAMMED A. ABARAN

CHECKED BY

MARK ANTHONY C. BELENO

ENGINEER

DATE

APPROVED BY

GEORGE L. RUELAN

CHIEF MAINTENANCE SECTION

DATE

RECOMMENDED BY

REY M. ROA

PROJ. ASST. DISTRICT ENGINEER

DATE

APPROVED BY

CHARITO B. MADULA

DISTRICT ENGINEER

DATE

SHEET NO.

TS-2

27

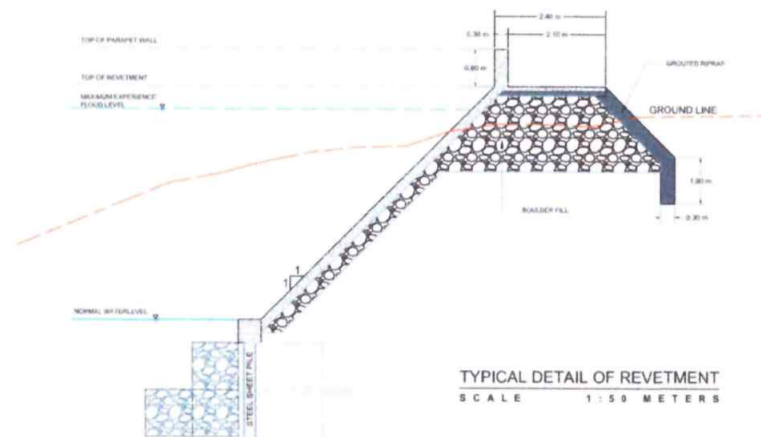
DATE

SHEET NO.

11

21

DATE

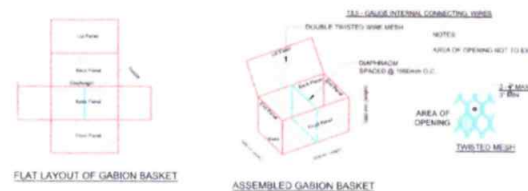


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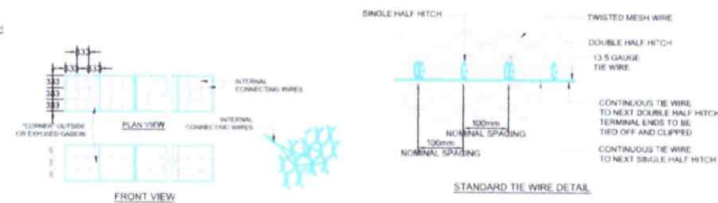
1. INTERNAL CONNECTING WIRES (13.5 - GAUGE) TO BE INSTALLED ACROSS WIDTH OF INTERIOR GABIONS AND ACROSS WIDTH AND LENGTH OF END GABIONS.
2. INTERNAL CONNECTING WIRES AND GABION MESH SHALL BE GALVANIZED.
3. INTERNAL CONNECTING WIRES ARE REQUIRED ON ALL GABIONS 1.0 METERS HIGH.
4. PREFORMED STIFFENERS (12Ø - REBAR) ARE ACCEPTABLE ALTERNATIVE TO INTERNAL CONNECTING WIRES. INSTALL THEM AS RECOMMENDED AND DIRECTED BY THE ENGINEER AT ½ POINTS.

STANDARD SPECIFICATIONS FOR GABIONS AND MATTRESSES:

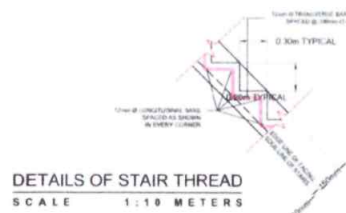
1. BODY WIRE DIAMETER - 2.20 mm (min)
2. SELVAGE WIRE DIAMETER - 2.70 mm (min)
3. TENSILE STRENGTH - 515 MPa
4. WEIGHT OF ZINC COATING - 230 g/sqm (min) coated wire surface
5. ELONGATION: 200mm CAGE - LENGTH - 12% (min)
6. TYING AND CONNECTING WIRE DIAMETER - 2.20 mm (min)
7. ROCK FILL - 100 to 200 mm dia.
8. DENSITY OF FILLED GABIONS - 1400 kg/cum (min)
9. WIRE MESH SHOULD BE DOUBLE TWISTED - 8 x 10



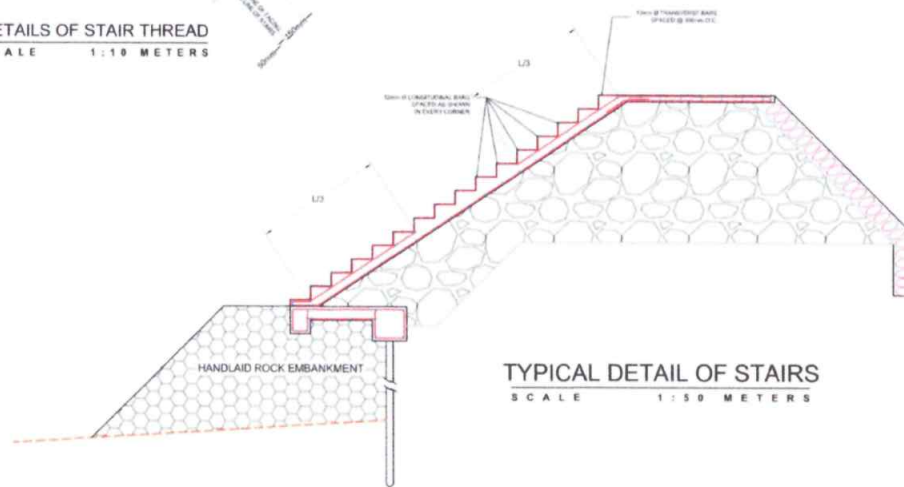
TYPICAL GABION BASKET DETAILS
NOT TO SCALE



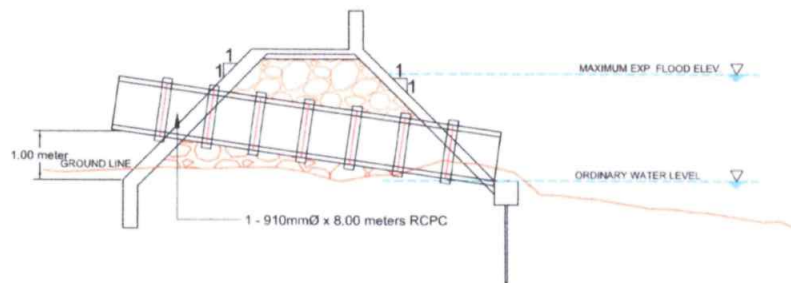
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE X 1ST DISTRICT ENGINEERING OFFICE ORIGUETA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION REPAIR/MAINTENANCE OF DABUGO RIVER REVEMENT & LOPEZ JAENA MISAMIS OCCIDENTAL LOPEZ JAENA, MISAMIS OCCIDENTAL	SHEET CONTENTS TYPICAL GABION BASKET DETAILS, TYPICAL DETAIL OF REVETMENT & STANDARD TIE WIRE DETAIL	DRAWN BY KARL ANTONIO M. ESTRADA DATE MOHAMMAD H. BARAN	REVIEWED MARK ANTHONY C. BELENO DATE ENGINEER	SUBMITTED GEORGE L. RUELAN DATE SUBMITTABLE SECTION	RECOMMENDED REY M. ROA DATE DISTRICT ENGINEER	APPROVED CHARITO B. MADULA DATE DISTRICT ENGINEER	SHEET NO. 12 SHEET NO. 21
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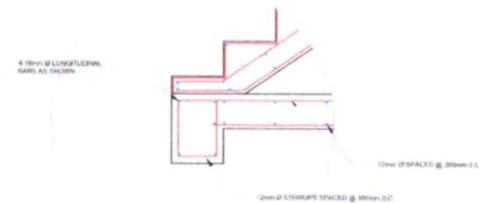
DETAILS OF STAIR THREAD
SCALE 1:10 METERS



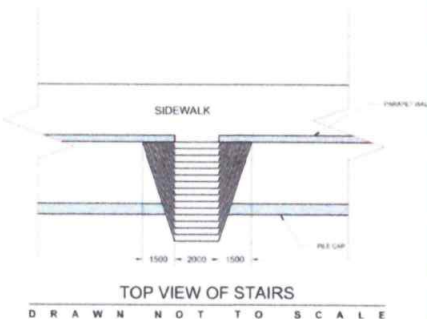
TYPICAL DETAIL OF STAIRS
SCALE 1:50 METERS



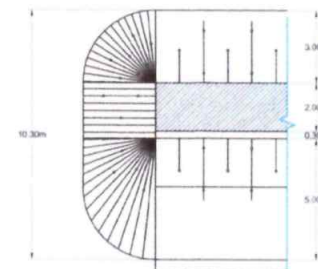
TYPICAL DETAIL OF RCPC



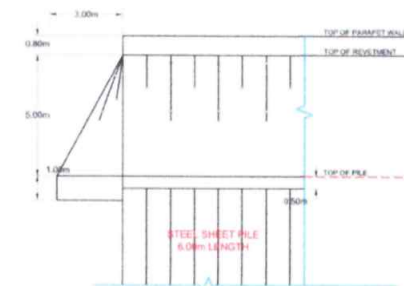
DETAILS OF STAIRS BEAM AND LANDING
DRAWN NOT TO SCALE



TOP VIEW OF STAIRS
DRAWN NOT TO SCALE



SCHEDULE OF END REVETMENT	
STATION	LOCATION
STA. 0+489	RIGHT SIDE



TYPICAL DETAIL OF END REVETMENT
SCALE 1:100 METERS



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE 4
1ST DISTRICT ENGINEERING OFFICE
DURAN, CITY, MIMAROPAS

PROJECT NAME AND LOCATION:

REPAIR/MAINTENANCE OF DAMAGED REVENUE'S LAPEZ JARNA
MIMAROPAS OCCIDENTAL
LAPEZ JARNA, MIMAROPAS OCCIDENTAL

SHEET CONTENTS:

TYPICAL DETAIL OF RCPC
TYPICAL DETAIL OF STAIRS

DRAWN BY:

KARL ANTHONY C. ESTERADA
PREPARED BY:
MOHAMED R. AMBARAN

REVIEWED BY:

MARK ANTHONY C. BALENO
ENGINEER

SUBMITTED BY:

GEORGE L. RUELAN
SHEET MAINTENANCE SECTION

RECOMMENDED BY:

REY M. ROA
DISTRICT ENGINEER

APPROVED BY:

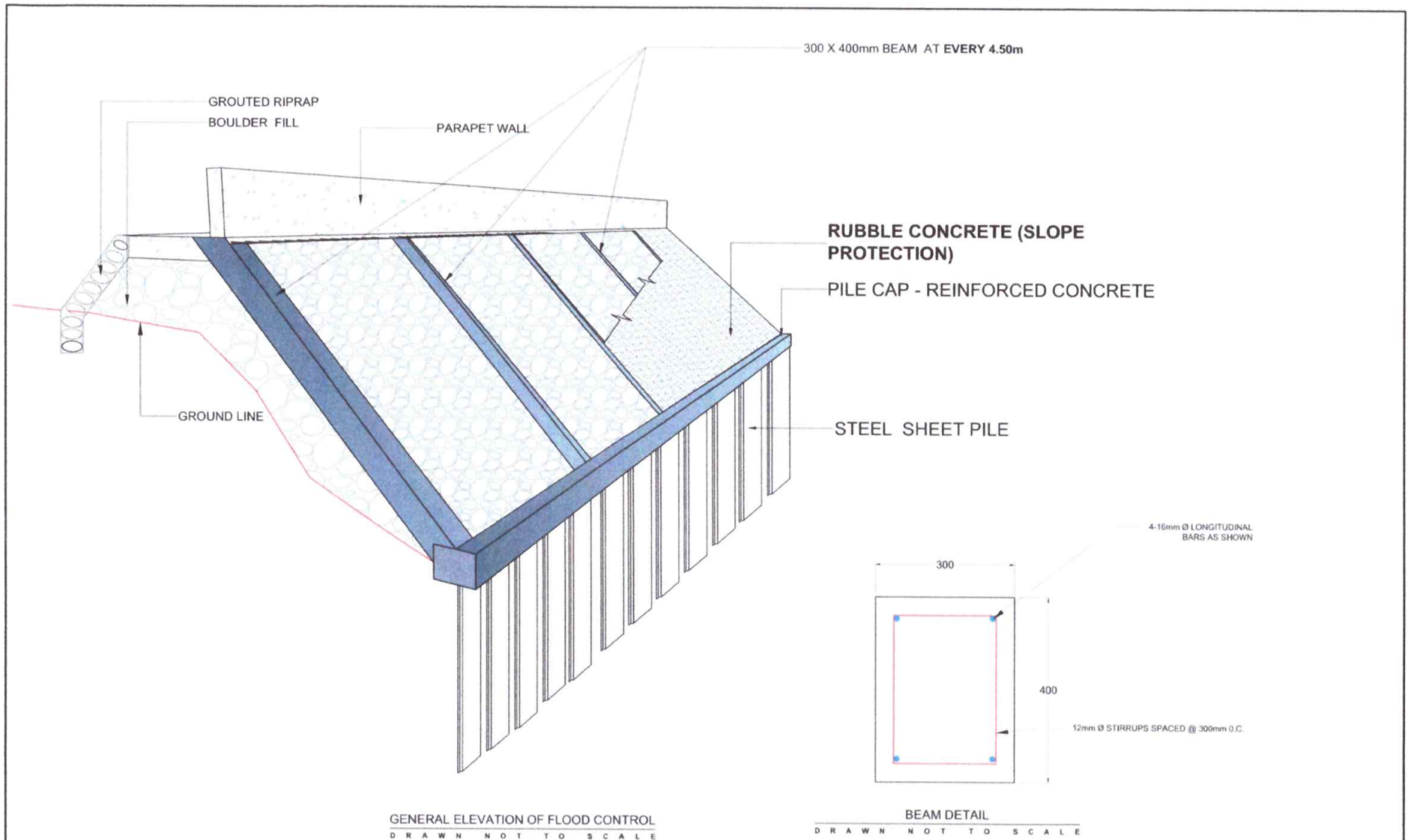
CHARITO B. MADULA
DISTRICT ENGINEER

SHEET NO.

TS-4
47

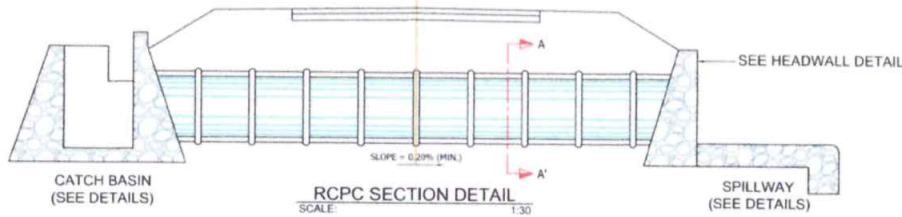
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13
21



 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 4 1ST DISTRICT ENGINEERING OFFICE (DIO) CEBU CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION REPAIR/MAINTENANCE OF DABUG RIVER NEARBY S. LOPEZ, JARNA, MISAMIS OCCIDENTAL LOPEZ JARNA, MISAMIS OCCIDENTAL	SHEET CONTENTS GENERAL ELEVATION OF FLOOD CONTROL BEAM DETAIL	DRAWN BY KARL ANTONIO C. ESTERINA PREPARED BY MOHAMMED M. SAMBARAN	REVIEWED BY MARK ANTHONY C. BELENO ENGINEER	SUBMITTED BY GEORGE L. RUELAN CHIEF MAINTENANCE SECTION	REVIEWED BY REYM. ROA CHIEF MAINTENANCE SECTION	APPROVED BY CHARITO B. MADULA DISTRICT ENGINEER	DATE 5 / 7 14 21
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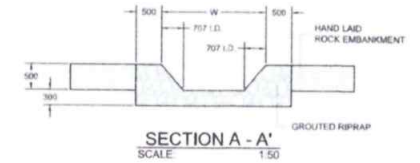
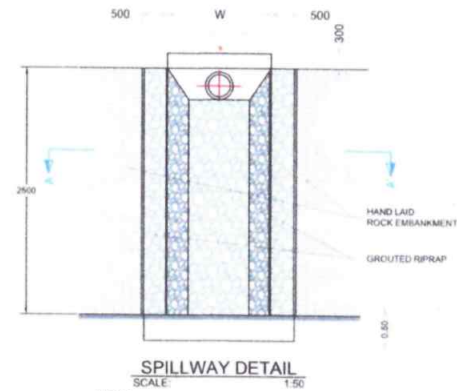
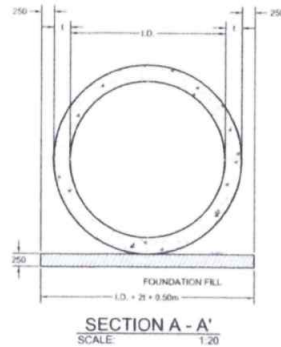
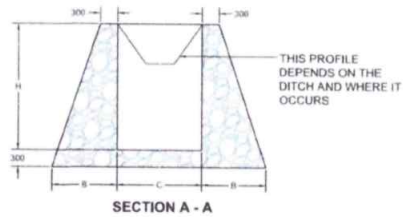
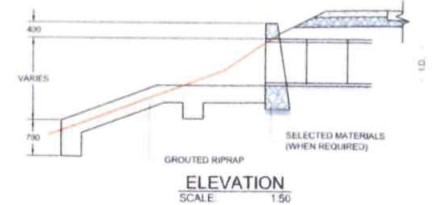
REINFORCED CONCRETE PIPE CULVERT DETAIL



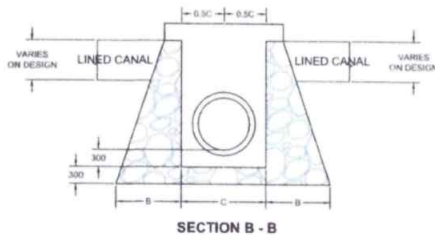
INLET OR OUTLET HEADWALLS DIMENSIONS FOR SINGLE & MULTI BARREL RCPC

(DIMENSIONS ARE IN CENTIMETERS)

PIPE DIAMETER (mm)	610	760	910	1070	1220	1520
MIN. TH. SHELLTY	240	271	276	320	387	397
COMMON TO ALL SIZES	A	46	107	108	110	116
	B	127	146	167	177	198
	D	167	176	187	207	225
	C	163	158	173	171	161
FOR HAND LAID ROCK EMBANKMENT	M	241	238	297	321	346
	N	127	129	142	146	161
	O	202	202	222	224	244
	P	103	104	107	117	126
	Q	124	104	114	120	129



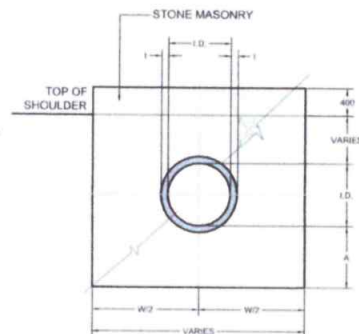
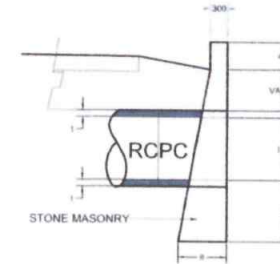
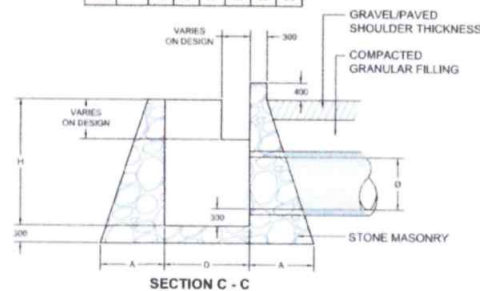
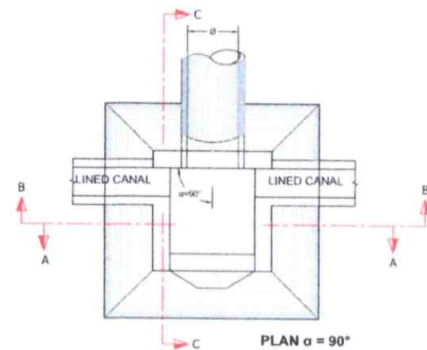
NOTE:
GROUTED RIPRAP SHOULD BE PLACED ON THE OUTLET OF PIPE CULVERTS ONLY.
BEDDING OF SELECTED MATERIALS BELOW HEADWALL MAY BE REQUIRED BY THE ENGINEER.



CATCH BASIN DIMENSIONS FOR SINGLE & MULTI BARREL RCPC

(DIMENSIONS ARE IN CENTIMETERS)

PIPE DIAMETER (mm)	610	760	910	1070	1220	1520
COMMON TO ALL SIZES	A	106	104	121	140	158
	B	167	167	173	178	187
	C	167	167	173	178	187
	D	167	167	173	178	187
SINGLE	E	110	130	140	140	150
DOUBLE	F	202	202	222	224	244
TRIPLE	G	204	204	224	226	246



DETAIL OF MASONRY CATCH BASIN TYPE C

NOTE: MINIMUM SLOPE OF RCPC IS 2%

The architectural drawings for the wheelguard are as follows:

- PERSPECTIVE:** Shows three rectangular wheelguard units arranged in a row on a sloped surface. Each unit has a width of 500 and a height of 500.
- SIDE ELEVATION:** A single rectangular unit with a width of 500 and a height of 500. The surface is covered in a pattern of small circles.
- FRONT ELEVATION:** Shows three rectangular units side-by-side. Each unit has a width of 300 and a height of 1000. The surface is covered in a pattern of small circles.

DETAIL OF WHEELGUARD

SCALE 1:50 M

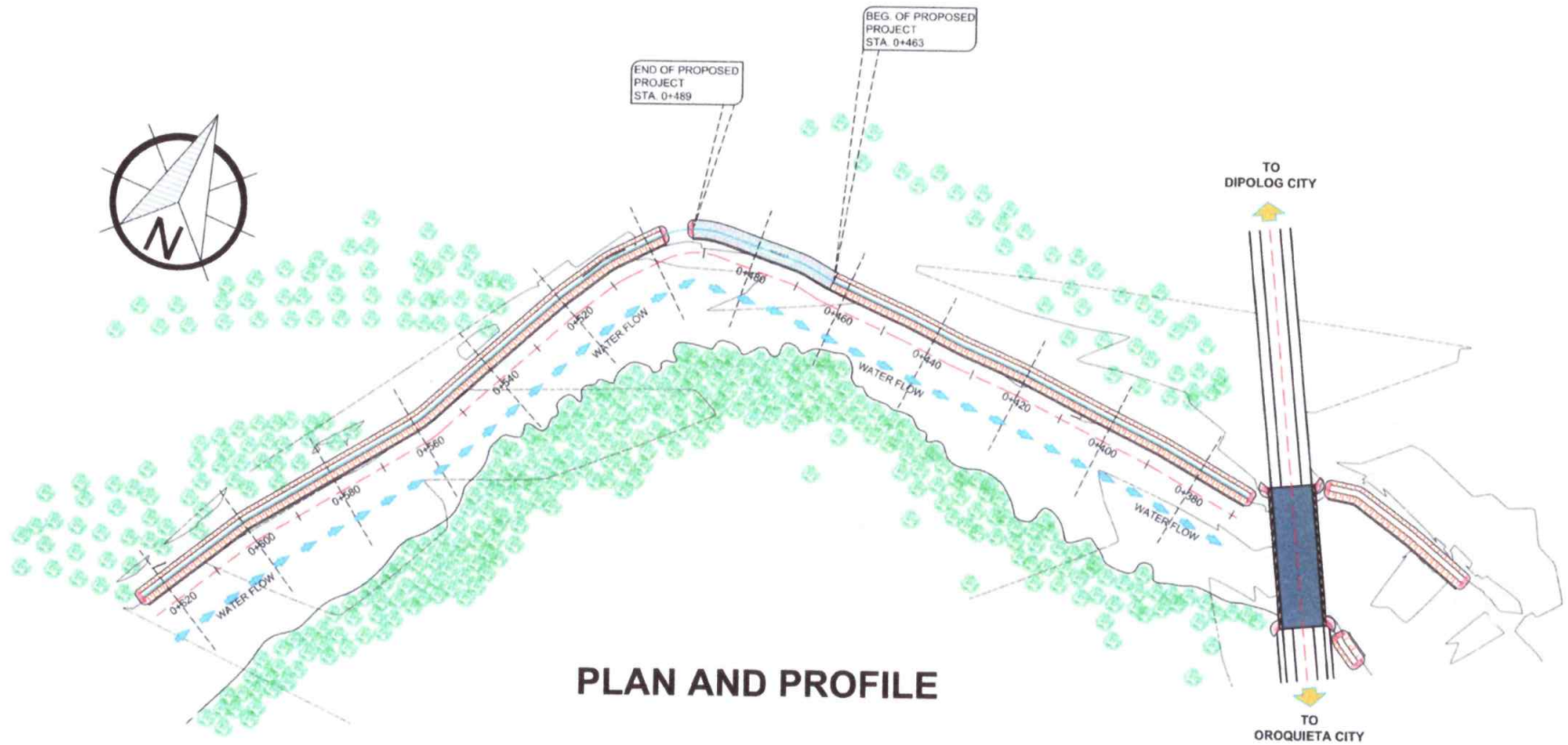
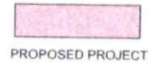


PP. PLAN & PROFILE

REPAIR/MAINTENANCE OF DAISUG REVETMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL

LOPEZ JAENA, MISAMIS OCCIDENTAL

LEGEND:



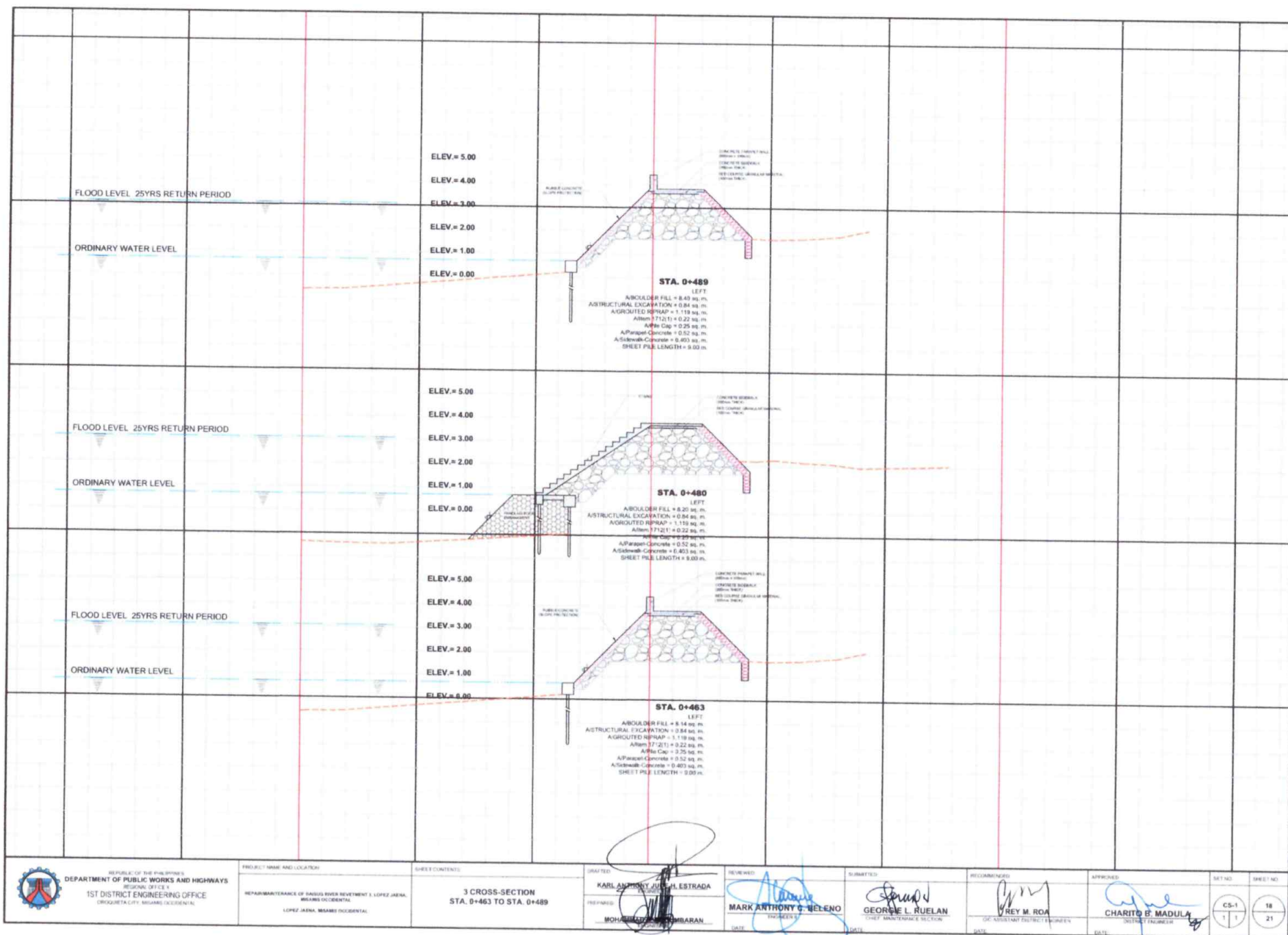
PLAN AND PROFILE

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 1 1ST DISTRICT ENGINEERING OFFICE OROQUIETA CITY, MISAMIS OCCIDENTAL	PROJECT NAME AND LOCATION REPAIR/MAINTENANCE OF GABUGO RIVER REVEGETATION 1, LOPEZ JAENA, MISAMIS OCCIDENTAL LOPEZ JAENA, MISAMIS OCCIDENTAL	SHEET CONTENTS PLAN AND PROFILE	DRAWN BY KARL ANTHONY J. M. ESTRADA PREPARED BY MOHAMMAD S. SAMBARAN	REVIEWED BY MARK ANTHONY C. BELENO DATE	SUBMITTED BY GEORGE L. RUELAN DATE	RECOMMENDED BY MEY M. ROA DATE	APPROVED BY CHARITO B. MADULA DATE	SHEET NO. PP-1 17	SHEET NO. 21
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CS. CROSS-SECTIONS

REPAIR/MAITENANCE OF DAISUG REVETMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL

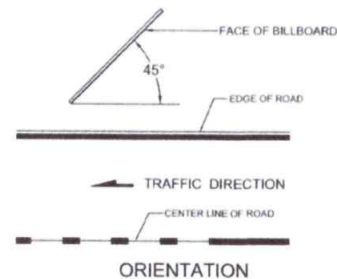
LOPEZ JAENA, MISAMIS OCCIDENTAL



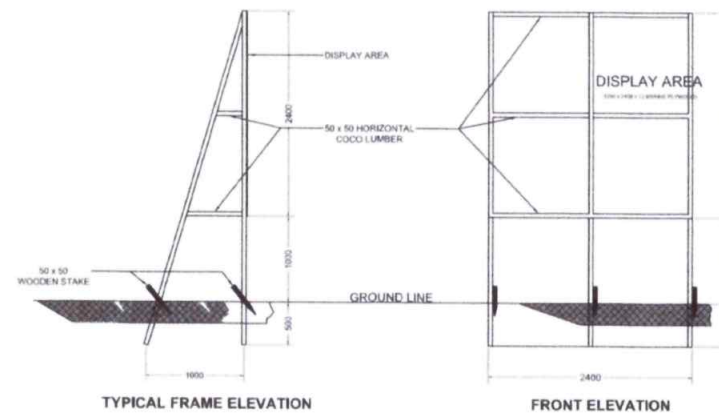
SG. STANDARDS & GENERAL DRAWINGS

REPAIR/MAINTENANCE OF DAISUG REVETMENT 3, LOPEZ JAENA, MISAMIS OCCIDENTAL

LOPEZ JAENA, MISAMIS OCCIDENTAL



NOTE:
For Source of Fund, state if DWPB Regular Budget, Priority Development
Assistant Fund, DepEd/DA/DAR Budget, Calamity Fund, MVUC Fund, etc.



 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE 8 1ST DISTRICT ENGINEERING OFFICE (DRO) CAGAYAN CITY, MIAGAO OCCIDENTAL	PROJECT NAME AND LOCATION	SHEET CONTENTS	DRAFTED BY: KARL ANTHONY C. ELESTRA	REVIEWED BY: MARK ANTHONY C. BELENO ENGINEER II	SUBMITTED BY: GEORGE L. RUELAN CHIEF, MAINTENANCE SECTION	RECOMMENDED BY: WY M. ROA DISTRICT ENGINEER	APPROVED BY: CHARITO B. MADULA DISTRICT ENGINEER	SET NO. 50-1 13	SHEET NO. 19 21
	REPAIR/MAINTENANCE OF GABUO RIVER RETENTION WALL, LOPEZ JAENA, MIAGAO OCCIDENTAL LOPEZ JAENA, MIAGAO OCCIDENTAL	DPWH PROJECT BILLBOARD COA PROJECT BILLBOARD	PREPARED BY: MOHAMMAD A. ALIBARIAN	DATE:	DATE:	DATE:	DATE:	DATE:	

